

WHAT IS CLAIMED IS:

1. An anti-vibration support system for an engine, comprising an active anti-vibration supporting device including
an elastic member adapted to receive a vibration of the engine;
a liquid chamber, wherein at least a portion of a wall surface of said liquid chamber is defined by said elastic member;
a movable member adapted to change a volume of said liquid chamber; and
an actuator that uses an electromagnetic force to drive said movable member,
wherein the vibration of the engine is prevented from being transmitted to a vehicle body frame by controlling a supply of electric current to said actuator, and
wherein operation of said active anti-vibration supporting device is prohibited when an abnormality in an operational state of the engine is detected.
2. The anti-vibration system according to claim 1, wherein said elastic member is formed from rubber.
3. The anti-vibration system according to claim 1, wherein said movable member is vertically movable and includes a shaft portion extending into said actuator.
4. The anti-vibration system according to claim 1, wherein said actuator includes an outer shell defined by an actuator housing.
5. The anti-vibration system according to claim 4, wherein a yoke is fixed to a lower portion of said actuator housing and a coil is accommodated within a space defined by said actuator housing and said yoke.
6. The anti-vibration system according to claim 5, wherein a disk-shaped armature is slidably supported on an inner peripheral surface of said actuator housing and opposite an upper surface of said coil.

7. The anti-vibration system according to claim 6, wherein a biasing member is disposed between said armature and an upper portion of a bobbin around which said coil is wound and biases said armature upward.

8. The anti-vibration system according to claim 7, wherein a cylindrical slider is slidably fitted within a cylindrical portion of said yoke and includes a boss to which said shaft portion of said movable member is connected.

9. The anti-vibration system according to claim 8, wherein a cylindrical bearing is slidably fitted between said cylindrical portion of said yoke and said cylindrical slider.

10. The anti-vibration system according to claim 9, wherein a coiled biasing member is disposed between said cylindrical bearing and said cylindrical slider, and about said shaft portion of said movable member, and wherein said coiled biasing member biases said cylindrical bearing and said cylindrical slider in respective opposite directions.

11. An anti-vibration support system for a cylinder-suspendable engine, comprising an active anti-vibration supporting device including

an elastic member adapted to receive a vibration of the engine;

a liquid chamber, wherein at least a portion of a wall surface of said liquid chamber is defined by said elastic member;

a movable member adapted to change a volume of said liquid chamber; and

an actuator that uses an electromagnetic force to drive said movable member,

wherein the vibration of the engine is prevented from being transmitted to a vehicle body frame by controlling a supply of electric current to said actuator, and

wherein the cylinder suspension of the engine is prohibited when an abnormality in an operational state of said active anti-vibration supporting device is detected.

12. The anti-vibration system according to claim 11, wherein said elastic member is formed from rubber.

13. The anti-vibration system according to claim 11, wherein said movable member is vertically movable and includes a shaft portion extending into said actuator.

14. The anti-vibration system according to claim 11, wherein said actuator includes an outer shell defined by an actuator housing.

15. The anti-vibration system according to claim 14, wherein a yoke is fixed to a lower portion of said actuator housing and a coil is accommodated within a space defined by said actuator housing and said yoke.

16. The anti-vibration system according to claim 15, wherein a disk-shaped armature is slidably supported on an inner peripheral surface of said actuator housing and opposite an upper surface of said coil.

17. The anti-vibration system according to claim 16, wherein a biasing member is disposed between said armature and an upper portion of a bobbin around which said coil is wound and biases said armature upward.

18. The anti-vibration system according to claim 17, wherein a cylindrical slider is slidably fitted within a cylindrical portion of said yoke and includes a boss to which said shaft portion of said movable member is connected.

19. The anti-vibration system according to claim 18, wherein a cylindrical bearing is slidably fitted between said cylindrical portion of said yoke and said cylindrical slider.

20. The anti-vibration system according to claim 19, wherein a coiled biasing member is disposed between said cylindrical bearing and said cylindrical slider, and about said shaft portion of said movable member, and wherein said coiled biasing member biases said cylindrical bearing and said cylindrical slider in respective opposite directions.